

Claims:

1. A metering system for measuring a commodity characteristic and reporting the commodity characteristic to a commodity receiver, the system comprising:
  - a first meter having a first transducer operable to sense the commodity characteristic and generate data representative of the commodity characteristic, and a communication section operable to transmit the data from the first meter; and
  - a second meter having a second communication section configured to relay the data from the first meter to the commodity receiver or a subsequent meter.
2. The system of claim 1, and wherein the data further comprises a data target identification, a target request, and a target reply.
3. The system of claim 1, and wherein each of the meters further comprises a meter identification, and wherein the commodity receiver comprises a commodity receiver identification.
4. The system of claim 3, and wherein each of the meters further comprises a data target identification, wherein a meter becomes a data target when the data target identification matches the meter identification, and wherein the commodity receiver becomes a data target when the data target identification matches the commodity receiver identification.
5. The system of claim 1, and wherein each of the meters further comprises a level translator operatively to condition the data.
6. The system of claim 1, and wherein the second meter further comprises a second transducer, and wherein the transducer further comprises a voltage interface transducer.
7. The system of claim 1, and wherein the second meter further comprises a second transducer, and wherein the further comprises a current interface transducer.
8. The system of claim 1, and wherein each of the meters further comprises a controller, and wherein each of the meters further comprises a display operable to be coupled to each of the controller to display the data.

9. The system of claim 1, and wherein each of the meters further comprises an antenna operatively coupled to the communication section to transmit and receive.

10. The system of claim 1, and wherein each of the communication sections further comprises a spread spectrum processor to spectrally spread a radio frequency signal.

5 11. The system of claim 10, and wherein each of the communication sections further comprises a transceiver to transmit and receive a spectrally spread signal over a local area network.

12. The system of claim 11, and wherein the transceiver further comprises a frequency synthesizer operable to generate a carrier signal, the carrier signal to be modulated by the  
10 spectrally spread signal.

13. The system of claim 1, and wherein each of the meters further comprises a plug-in interface module operatively coupled to the communication section to communicate with a network device.

14. The system of claim 13, and wherein the network device comprises a local area  
15 network device.

15. The system of claim 13, and wherein the network device comprises a common carrier wide area network device.

16. The system of claim 1, and the commodity receiver comprises a gateway node.

17. The system of claim 1, and wherein the commodity receiver comprises a utility  
20 provider.

18. The system of claim 1, and wherein each of the meters is an electric meter.

19. A metering system for measuring a commodity characteristic and reporting the commodity characteristic to a commodity receiver, the system comprising:

a first meter having a first transducer means for sensing the commodity  
25 characteristic and generating data representative of the commodity characteristic, and a communication means for transmitting the data from the first meter; and

a second meter having a second communication section configured to relay the data from the first meter to the commodity receiver or a subsequent meter.

20. The system of claim 19, and wherein the data further comprises a data target identification, a target request, and a target reply.

5 21. The system of claim 19, and wherein each of the meters further comprises a meter identification, and wherein the commodity receiver comprises a commodity receiver identification.

22. The system of claim 21, wherein each of the meters further comprises a data target identification, wherein a meter becomes a data target when the data target identification  
10 matches the meter identification, and wherein the commodity receiver becomes a data target when the data target identification matches the commodity receiver identification.

23. The system of claim 19, and wherein each of the meters further comprises a level translator for conditioning the data.

24. The system of claim 19, and wherein the second meter further comprises a second  
15 transducer, and wherein the transducer further comprises a voltage interface transducer.

25. The system of claim 19, and wherein the second meter further comprises a second transducer, and wherein the further comprises a current interface transducer.

26. The system of claim 19, and wherein each of the meters further comprises a controller, and wherein each of the meters further comprises a display operable to be  
20 coupled to each of the controller for displaying the data.

27. The system of claim 19, and wherein each of the meters further comprises an antenna operatively coupled to the communication section for transmitting and receiving.

28. The system of claim 19, and wherein each of the communication sections further comprises a spread spectrum processor for spectrally spreading a radio frequency signal.

25 29. The system of claim 28, and wherein each of the communication sections further comprises a transceiver for transmitting and receiving a spectrally spread signal over a local area network.

30. The system of claim 29, and wherein the radio frequency transceiver further comprises a frequency synthesizer for generating a carrier signal, the carrier signal to be modulated by the spectrally spread signal.

31. The system of claim 19, and wherein each of the meters further comprises a plug-in interface module operatively coupled to the communication section for communicating with a network device.

32. The system of claim 31, and wherein the network device comprises a local area network device.

33. The system of claim 31, and wherein the network device comprises a common carrier wide area network device.

34. The system of claim 19, and the commodity receiver comprises a gateway node.

35. The system of claim 19, and wherein the commodity receiver comprises a utility provider.

36. The system of claim 19, and wherein each of the meters is an electric meter.

37. A method of relaying data representative of a commodity characteristic, the method comprising the acts of:

generating data using the commodity characteristic at a first meter;

transmitting the data with a first transceiver from the first meter;

receiving the data from the first meter at a second meter; and

transmitting the data using the second meter to a remote commodity receiver or a third meter.

38. The method of claim 37, further comprising the acts of transmitting and receiving the data over a network.

39. The method of claim 37, further comprising the act of conditioning the commodity characteristic.

40. The method of claim 37, and wherein the commodity characteristics comprises a voltage level, the method further comprising the acts of sensing the voltage level with a voltage transducer.

5 41. The method of claim 37, and wherein the commodity characteristics comprises a current level, the method further comprising the acts of sensing the current level with a current transducer.

42. The method of claim 37, further comprising the act of displaying the processed commodity characteristic.

10 43. The method of claim 37, further comprising the acts of transmitting and receiving the data with an antenna.

44. The method of claim 37, further comprising the act of spectrally spreading a radio frequency signal based on the commodity characteristic.

45. The method of claim 44, further comprising the acts of transmitting and receiving a spectrally spread signal.

15 46. The method of claim 45, further comprising the acts of transmitting and receiving the spectrally spread signal over a local area network.

47. The method of claim 46, further comprising the act of generating a carrier signal to be modulated by the spectrally spread signal.

20 48. The method of claim 37, further comprising the acts of:  
providing the meter a plug-in interface; and  
transmitting and receiving with a network device via the plug-in interface.

49. The method of claim 48, further comprising the acts of transmitting and receiving with a local area network device.

25 50. The method of claim 48, further comprising the acts of transmitting and receiving with a common carrier wide area network device.

51. The method of claim 37, and wherein each of the meters is an electric meter.

52. A meter relay system comprising:

a commodity transceiver; and

a plurality of meters including at least one meter being a target meter, each meter  
5 having a transducer operable to sense a commodity characteristic and generate data  
representative of the commodity characteristic, and each meter having a communication  
section operable to receive a request from the commodity transceiver and from an adjacent  
meter, to transmit the request to an adjacent meter until the request reaches the target  
meter, to receive the data from an adjacent meter, and to transmit the data to an adjacent  
10 meter and to the commodity transceiver.

53. The system of claim 52, and wherein the data further comprises a target meter  
identification.

54. The system of claim 52, and wherein each of the meters further comprises a meter  
identification, and wherein the commodity transceiver comprises a commodity  
15 identification.

55. The system of claim 54, and wherein the data further comprises a target  
identification, wherein a meter becomes a target meter when the target identification  
matches the meter identification, and wherein a commodity transceiver becomes a target  
meter when the target identification matches the commodity identification.

20 56. The system of claim 52, and wherein each of the meters further comprises a level  
translator operatively to condition the data.

57. The system of claim 52, and wherein the transducer further comprises a voltage  
interface transducer.

58. The system of claim 52, and wherein the transducer further comprises a current  
25 interface transducer.

59. The system of claim 52, and wherein each of the meters further comprises a controller, and wherein each of the meters further comprises a display operable to be coupled to each of the controller to display the data.

60. The system of claim 52, and wherein each of the meters further comprises an  
5 antenna operatively coupled to the communication section to transmit and receive.

61. The system of claim 52, and wherein each communication section further comprises a spread spectrum processor to spectrally spread a radio frequency signal.

62. The system of claim 61, and wherein each communication section further comprises a radio frequency transceiver to transmit and receive a spectrally spread signal  
10 over a local area network.

63. The system of claim 62, and wherein the radio frequency transceiver further comprises a frequency synthesizer operable to generate a carrier signal to be modulated by the spectrally spread signal.

64. The system of claim 52, and wherein each of the meters further comprises a plug-in  
15 interface module operatively coupled to the communication section to communicate with a network device.

65. The system of claim 64, and wherein the network device comprises a local area network device.

66. The system of claim 64, and wherein the network device comprises a common  
20 carrier wide area network device.

67. The system of claim 52, and the commodity transceiver comprises a gateway node.

68. The system of claim 52, and wherein the commodity transceiver comprises a utility provider.

69. The system of claim 52, and wherein at least one of meters is an electric meter.